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**FINAL
DEFENSE DISTRIBUTION REGION WEST
TRACY, CALIFORNIA**

**OPERABLE UNIT 1
EXPLANATION OF SIGNIFICANT DIFFERENCE**

**for the Change from
Groundwater Extraction and ReInjection
of Treated Groundwater to
Groundwater Extraction, ReInjection of Treated Groundwater
and Dispersion**

Prepared for:

**U.S. Army Corps of Engineers
Huntsville Division**

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EXPLANATION OF SIGNIFICANT DIFFERENCE

1.0 INTRODUCTION

In August 1993, the Final Record of Decision (ROD) was signed, documenting the cleanup plan for Operable Unit 1 (OU 1) for DDRW-Tracy. As required under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA), and pursuant to 40 CFR Section 300.435(c)(2)(i)(Federal Register Volume 55, No. 46, [March 8, 1990]) this Explanation of the Significant Difference (ESD) describes a change from the air stripping technology described in the ROD (DLA, 1993) to a combination of air stripping technology and dispersion for the chlorinated hydrocarbons (TCE and PCE) at the DDRW-Tracy facility. An ESD is required when significant but not fundamental changes are made to the final Remedial Action Plan described in the ROD. This ESD describes information developed during the remedial design process that supports the subject change.

The lead agency for this ESD is the Defense Logistics Agency (DLA). This ESD includes a brief background of the DDRW-Tracy OU 1 site, a summary of the remedy selected in the ROD, a description of how the noted change affects the remedy described in the ROD, and an explanation of why DDRW-Tracy is making this change to the selected remedy. This document is designed to (1) provide the public with an explanation of the change made to the remedy as described in the ROD, and (2) summarize the information that led to the change, and (3) affirm that the revised remedy complies with the statutory requirements of CERCLA Section 121. This ESD was prepared according to the following EPA guidance documents: *Guide to Addressing Pre-ROD and Post-ROD Changes* (EPA, 1991) and *Interim Final Guidance on Preparing Superfund Decision Documents* (EPA, 1989).

This ESD and supporting documentation will be placed in the DDRW-Tracy repository for interested members of the public to review. The repository is located at the Defense Distribution Region West-Sharpe, California, facility on Roth Road in Lathrop, California, in the Environmental Protection Office (Building 108). Accessible hours are Monday through Friday, 7:00 a.m. to 3:30 p.m. and at other times by request.

DDRW-Tracy provided a comment period for the EPA, the California Regional Water Quality Control Board (RWQCB) and the Department of Toxic Substances Control

(DTSC) of the California Environmental Protection Agency to comment on this ESD. Both comments and responses are presented in this ESD and will be included in the DDRW-Tracy administrative record file. Pursuant to 40 CFR Section 300.435(c)(2)(i) a public comment period is not required for an ESD.

2.0 SITE BACKGROUND

This section provides a brief description and history of the DDRW-Tracy site, chemicals of concern in the groundwater, and a summary of the remedy selected in the ROD. Further details can be found in the ROD and in the administrative record.

2.1 Site Description And History

DDRW-Tracy consists of a 448-acre triangular parcel of land located in the northwestern part of the San Joaquin Valley. An additional property (460 acres of agricultural land) to the north was acquired by the Depot in 1993 and is referred to as the Tracy Annex. The Depot is used as a storage and distribution facility for food, medical supplies, construction materials, clothing, and electrical, industrial, and general supplies common to military services throughout the nation and overseas. The site is underlain by several hundred feet of complex interbedded alluvial and (lake) sediments. Depth to groundwater at the site varies from about 3 to 46 feet below ground surface (bgs).

From the establishment of the Depot in 1942 through the 1970s, waste materials from various operations were buried, burned, or abandoned in numerous sites. As a result of earlier studies the solvents TCE, PCE and a related compound 1,1-dichloroethene (1,1-DCE), and dieldrin (a chlorinated pesticide) were identified in the aquifer beneath the site. The areal extent of the groundwater plume is shown on Figure 1. Additional compounds of concern were detected in the OU 1 plume. DDRW-Tracy agreed to consider the establishment of additional cleanup levels, as appropriate, in the Comprehensive RI/FS/PP/ROD. The cleanup of groundwater impacted by constituents other than TCE, PCE, and DCE will be addressed under the Site-Wide Comprehensive ROD. The Comprehensive ROD is scheduled to be released in draft form in April 1996.

2.2 Remedies Selected In The Rod

The ROD for OU 1 addresses only groundwater contamination, leaving the unsaturated zone and source areas for subsequent Site-Wide Comprehensive RI/FS. This

comprehensive RI/FS was recently submitted as a draft document (Montgomery Watson, 1995a) and is currently being reviewed by regulatory agencies. The Feasibility Study process will identify source area controls for a separate ROD that will be implemented to mitigate the future potential release of contaminants to the groundwater.

The selected groundwater remedy for OU 1 involved pumping and treatment of groundwater from various locations within the groundwater plume. Water will be pumped from one or more wells at each of the locations, from various horizons within the aquifer. These extraction locations have been optimized using a 3-D groundwater model (Montgomery Watson, 1995b). Treated groundwater will be reinjected, north, east, and southwest of the plume, to either provide hydraulic containment or for general disposal of treated water. The total rate of groundwater to be removed under this extraction plan is estimated to be about 1,250 gpm. Groundwater currently is being extracted at the rate of 350 to 500 gpm under an Interim Remedial Measure (IRM). An expanded extraction field, and an additional treatment plant will be constructed to extract and treat the remaining 750 gpm. The IRM extraction well field currently is remediating less than 40 percent of the area of the overall plume.

The IRM treatment facility consists of an air stripping tower to remove VOCs from water and a vapor phase carbon unit to remove VOCs from the stripping tower air stream. Treated water currently is disposed of at a combination of injection wells, an infiltration gallery, an infiltration gallery with an inset chimney drain, and a storm water pond located southwest of the IRM facility.

The Revised Effluent Treatment Standards (ETSs) for the IRM and expanded groundwater treatment system are contained in Table 1, and were derived from State Resolution 68-16 describing the State of California nondegradation policy.

The VOCs in groundwater beneath the DDRW-Tracy site, predominantly PCE and TCE, occur in relatively low concentrations that underlie about 30 percent of the site. Higher VOC concentrations (above 50 ppb) are localized within a four acre area. Maximum Contaminant Levels (MCLs) are the standard applied for aquifer cleanup. The aquifer cleanup goals as stipulated by the ROD are presented in Table 2.

Groundwater cleanup will be accomplished by groundwater extraction and treatment. The groundwater extraction process will remove contaminants by flushing of the aquifer,

TABLE 1
REVISED EFFLUENT TREATMENT STANDARDS

Constituent	Units	Monthly Median	Daily Maximum
Carbon Tetrachloride	µg/l	0.5	0.5
Chloroform	µg/l	0.5	5.0
Chromium (total)	µg/l	<50	50
1,1-Dichloroethene (DCE)	µg/l	0.5	5.0
Tetrachloroethene (PCE)	µg/l	0.5	5.0
Trichloroethene (TCE)	µg/l	0.5	5.0
Dieldrin	µg/l	<0.05	0.1
4,4-DDD	µg/l	0.15	1.0²
4,4-DDE	µg/l	0.1	1.0²
4,4-DDT	µg/l	0.1	1.0²
Chlordane	µg/l	0.104³	0.25
Monuron	µg/l	0.17³	0.35
Diuron	µg/l	0.15³	0.30
Total Volatile Organic Constituents (VOC) ¹	µg/l	1.0	5.0

1 EPA Method 601, purgeable halocarbons and Method 602, purgeable aromatic hydrocarbons.

2 The Daily maximum of 1 µg/l is calculated as a summation of DDD, DDE, and DDT.

3 These monthly medians represent the background concentrations found at the facility.

These standards are based on the State's non-degradation policy (Resolution 68-16 of the State Water Quality Control Board).

Values shown in bold face type indicate changes or additions to the 1993 ROD Table 4.2-3 Effluent Treatment Standards for OU 1.

TABLE 2
ROD STIPULATED AQUIFER CLEANUP REQUIREMENTS

Chemical	Aquifer Cleanup Standard	Standards Specified in the ROD
DCE	6.0 µg/l	California MCL
PCE	5.0 µg/l	Federal MCL
TCE	5.0 µg/l	Federal MCL

during which time VOCs desorb from soil particles to the aqueous media. As groundwater flows toward extraction wells, some of the VOCs are readsorbed onto soil particles and these are later desorbed in a continuing process of adsorption and desorption at various rates within the aquifer. Other remediation processes that occur within the aquifer include metabolism of organic compounds by micro-organisms and to a lesser extent by volatilization over time. These components of the remediation process occur in association with dispersion and are secondary to the extraction and treatment process.

The selected alternative in the ROD addresses all groundwater containing VOCs in excess of MCLs and will assure that Applicable or Relevant and Appropriate Requirements (ARARs) for individual VOCs will be achieved.

3.0 DESCRIPTION OF SIGNIFICANT CHANGE TO A SELECTED REMEDY

This ESD changes two portions of the ROD. To the extent that this ESD differs from the ROD it supersedes the ROD. First, the effluent treatment standards have been changed with modified values shown in boldface type on Table 1. Second, the technology for removing VOCs from the aquifer was changed from groundwater extraction and reinjection of treated groundwater to a combination of groundwater extraction, reinjection of treated groundwater, and dispersion (which includes metabolism and volatilization processes). This change results from the findings of a comparative analysis of Remediation Alternatives contained in the DDRW-Tracy Final 3-D Groundwater Model Technical Evaluation (Montgomery Watson, 1995b). In particular, the recommended approach, described as Alternative 3-the Preferred Well field Scenario, is the most cost-effective approach to achieve ROD stipulated objectives and well placement objectives that deal with the implications of an offsite chloroform plume and offsite property acquisition issues. These institutional issues are discussed below.

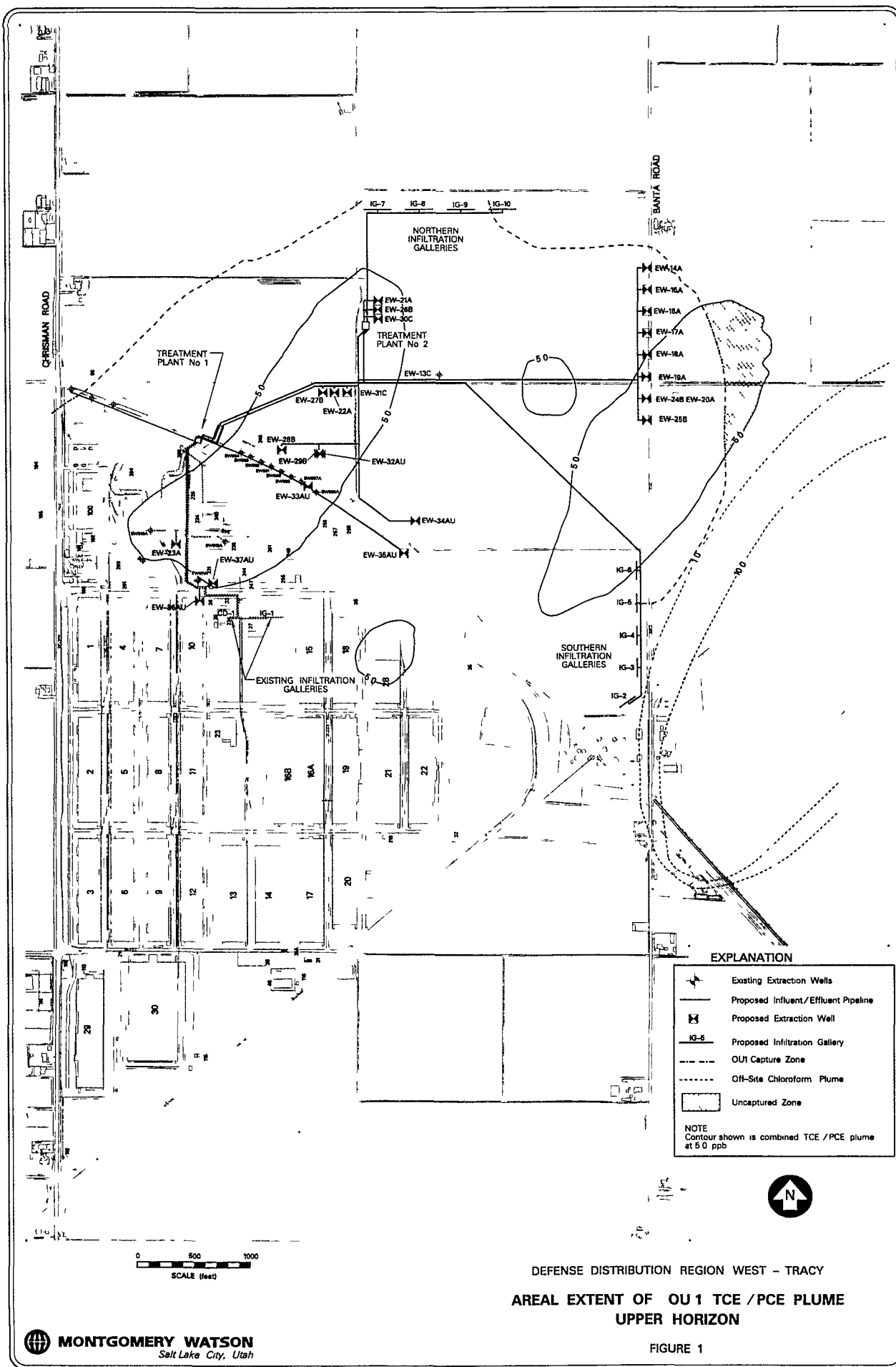
Subsequent to the ROD for OU 1, additional data on groundwater quality have been obtained and documented (Montgomery Watson, 1995b,d) that indicates the presence of a chloroform/carbon tetrachloride plume located immediately east of the combined PCE and TCE plumes for DDRW-Tracy. These plumes are in close proximity to each other as indicated in Figure 1. The chloroform/carbon tetrachloride plume is not believed to originate from operations at DDRW-Tracy. As part of the remedial design (RD) a 3-D groundwater model was generated to evaluate various extraction and groundwater reinjection scenarios. The results of this model indicate that it is not possible to provide 100 percent capture of the PCE/TCE plume without capturing a portion of the existing

off-Depot chloroform/carbon tetrachloride plume. If a portion of the off-Depot plume were to be captured by the DDRW–Tracy extraction system, it is possible the system would need to be designed to treat the chloroform and carbon tetrachloride rather than the TCE/PCE. The groundwater model results also indicate that chloroform/carbon tetrachloride migration to the extraction wells would result in contamination of areas that were not previously contaminated.

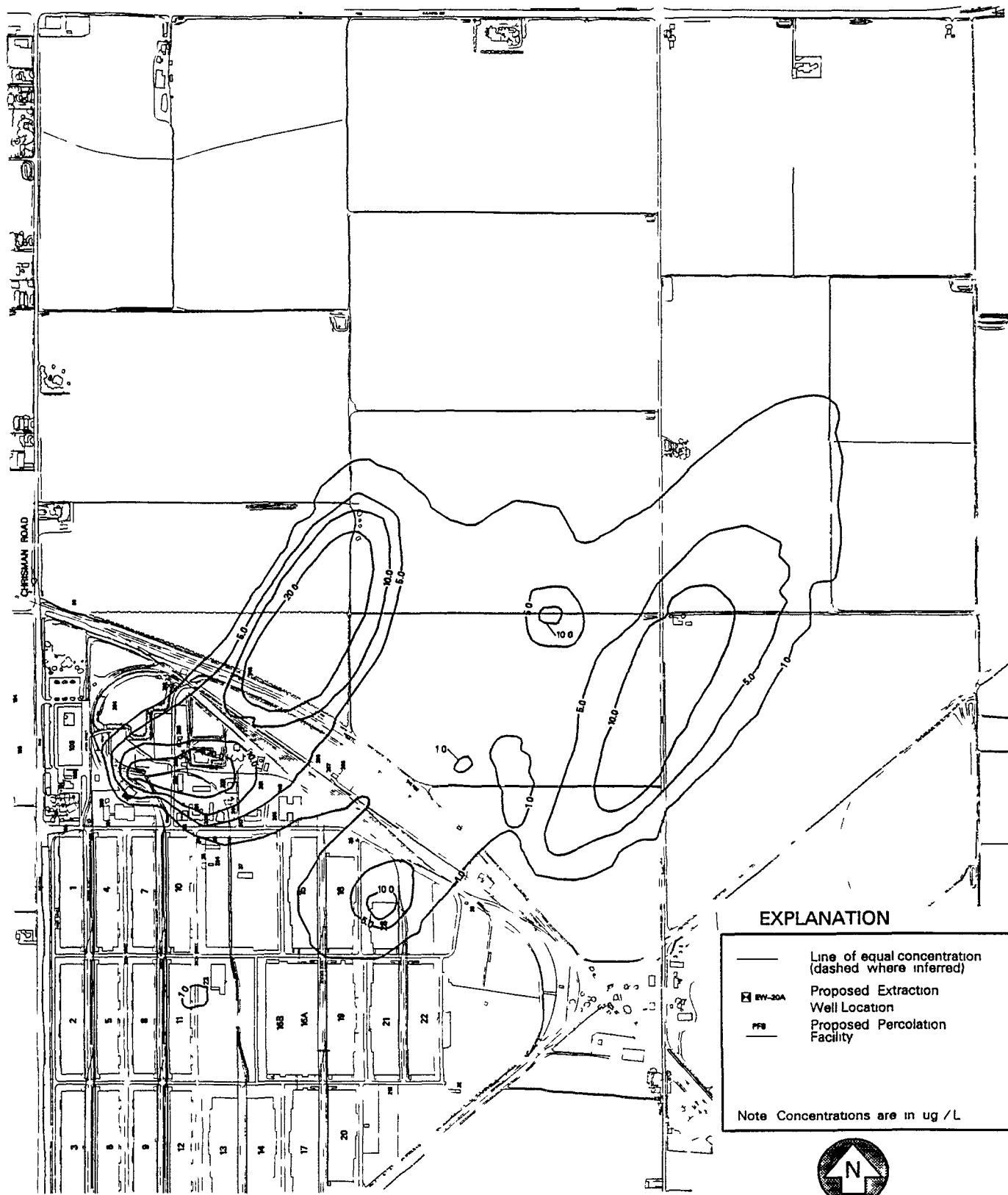
To fully address all implementation issues, the impact of acquiring off-depot property for the construction of the OU 1 extraction and reinjection system was considered. In order to actively remediate the portion of the plume in question east of Banta Road, it would be necessary to install off-site extraction wells off of depot property, east of Banta Road. Design alternatives that capture the plume with off-site wells would require planning, procurement of easements and prurient of property for off site extraction facilities. These activities historically have required some time to accomplish and are estimated to require a total of 42 months for this remediation. The 42-month delay in implementation of the action would allow for further migration of the OU 1 plume necessitating additional definition of the downgradient edge of the plume and potential relocation of extraction and monitoring wells.

In summary, the change from hydraulic capture and groundwater extraction to a combination of hydraulic capture, groundwater extraction, and dispersion only affects the easternmost and lowest concentration portion of the PCE/TCE plume. Groundwater modeling results indicate that dispersion of the plume east of Banta Road will result in achievement of MCLs within a period of ten years. Figures 2 through 7 illustrate the predicted combined PCE/TCE plume from initial conditions through ten years of operation.

As part of this remedy, DDRW–Tracy will establish a monitoring program to assess whether contaminant concentrations are decreasing over time and/or cleanup levels are being attained within the uncaptured portion of the plume within the groundwater restoration period. As a part of the groundwater monitoring program, TCE, PCE, and DCE (and any additional compounds of concern with cleanup levels as identified in the Comprehensive ROD) concentrations will be reevaluated annually, and will continue to be monitored within, and at the leading edge of, the uncaptured portion of the plume, as described by the approved Remedial Action Work Plan. The details of the monitoring program will be presented as a revision to the site-wide well monitoring program for regulatory review. In addition to the monitoring requirements previously described,



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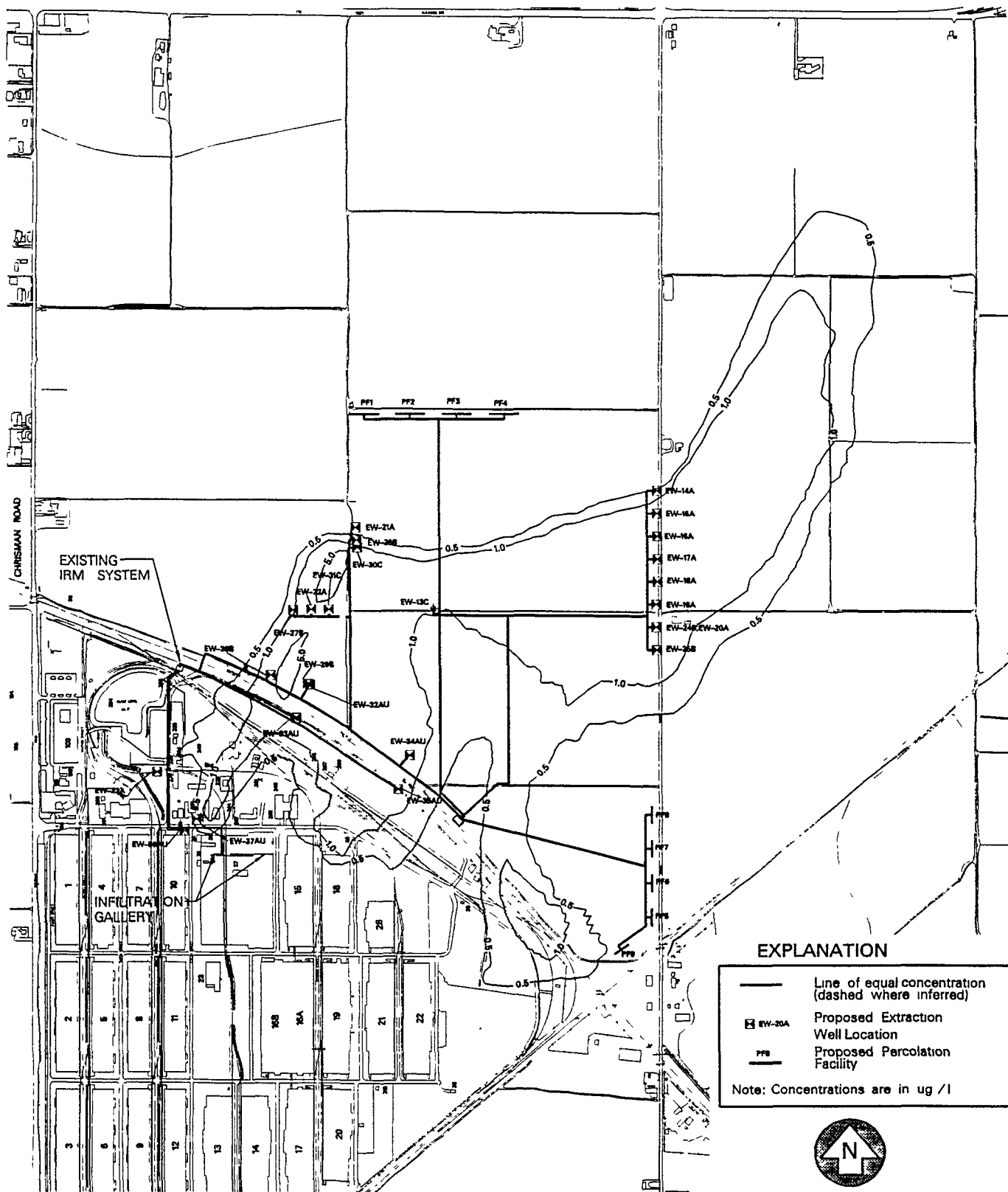


EXPLANATION

- Line of equal concentration (dashed where inferred)
 - EW-30A Proposed Extraction Well Location
 - PF8 Proposed Percolation Facility
- Note Concentrations are in ug / L



0 600 1200
SCALE Feet



EXPLANATION

- Line of equal concentration (dashed where inferred)
 - EW-30A Proposed Extraction Well Location
 - PF8 Proposed Percolation Facility
- Note: Concentrations are in ug / l



DEFENSE DISTRIBUTION REGION WEST - TRACY
 IMPACT OF PREFERRED WELL FIELD SCENARIO
 ON COMBINED TCE / PCE PLUME
 UPPER HORIZON
 AFTER 8 YEARS

FIGURE 6



MONTGOMERY WATSON
 Salt Lake City, Utah

DDRW-Tracy has included in the OU 1 design the ability to convert groundwater monitoring wells located at the leading edge of the uncaptured plume to extraction wells. The Depot has also taken the steps necessary to acquire the property access rights required for placement/conversion/operation of these wells. Should the contaminant levels in the uncaptured portion of the plume fail to decrease as predicted by the current computer model, the Depot will exercise its option to actively remediate the uncaptured portion of the plume. Although not a part of the CERCLA remedy, the precedent of providing alternate water supply and implementing institutional controls to areas affected by groundwater contamination exceeding MCLs will be maintained. Institutional controls will be reevaluated and/or removed after water quality objectives have been maintained at least one year.

4.0 REGULATORY AGENCY COMMENTS AND RESPONSES

A draft Explanation of Significant Difference was submitted for regulatory agency review on August 4, 1995. Comments were received from U.S. EPA on August 25, 1995, and from the Regional Water Quality Control Board on September 29, 1995. Additional comments were received from U.S. EPA dated November 2, and the Regional Water Quality Control Board dated October 24, 1995. Responses to these comments were incorporated, and were published in a revised Draft Final document submitted November 13, 1995. Comments to this Draft Final ESD were received from U.S. EPA December 14, 1995, and are incorporated herein.

5.0 STATUTORY DETERMINATIONS

Considering the new information that has been developed and the change that has been made to the selected remedy, EPA, California EPA, and DDRW-Tracy believe that the remedy remain protective of human health and the environment complies with federal and state requirements that were identified in the ROD as applicable or relevant and appropriate to this remedial action, and is cost effective. In addition, the revised remedy uses permanent solutions and alternative treatment technologies to the maximum extent practical for this site. The change contained herein is significant but does not fundamentally change the remedy.

Signature (Julie Anderson, Chief of Federal Facilities Cleanup Office,
U.S. Environmental Protection Agency, Region IX) Date

William H. Crooks 2-6-96
Signature (William H. Crooks, Executive Officer, CVRWQCB) Date

Anthony J. Landis 1-31-96
Signature (Anthony J. Landis, P.E., Chief Site Mitigation Branch
Region I, Department of Toxic Substances Control) Date

COL William M. Melton, Deputy Commander, DDRW 23 Jan 96
Signature (Captain Michael W. Casey, Commander, DDRW) for Date

6.0 PUBLIC PARTICIPATION ACTIVITIES

DDRW-Tracy has presented this change to remedy in the form of an ESD because the change is of a significant but not fundamental nature. DDRW-Tracy will provide the EPA and state regulatory agencies with a comment period on this ESD in accordance with Section 117(c) of CERCLA 42 U.S.C. Section 9617(c) DDRW-Tracy will publish a notice in a local newspaper which describes this ESD and its availability for review at the DDRW-Tracy repository. This ESD and all documents that support the change herein are contained in the administrative record for the DDRW-Tracy site.

7.0 REFERENCES

Defense Logistics Agency (DLA), 1993. Final Record of Decision for Operable Unit No. 1, Defense Distribution Region West-Tracy, California. Submitted to U.S. EPA September 1, 1993. Signed August 1993.

Montgomery Watson 1995b. DDRW-Tracy 3-D Groundwater Model Technical Evaluation.

Montgomery Watson, 1995a. DDRW-Tracy Draft Comprehensive Remedial Investigation/Feasibility Study-Phase II Technical Memorandum, March.

Montgomery Watson, 1995c. DDRW-Tracy Draft 60 Percent Remedial Action Work Plan for Operable Unit 1.

Montgomery Watson, 1995d. DDRW-Tracy 60 Percent Remedial Design Report and Analysis for Operable Unit 1.

U. S. Environmental Protection Agency (EPA) (1989), Interim Final Guidance on Preparing Superfund Decision Documents, Office of Solid Waste and Emergency Response, Directive 9335.3-02

U. S. Environmental Protection Agency (EPA) (1991), Guide to Addressing Pre-ROD and Post-ROD Changes, Office of Solid Waste and Emergency Response, Publication 9355.3-02, April 1991.